

We claim:

1. A synthetic resin bag for use with automatic bag filling equipment, said bag

comprising:

(A) first and second side walls joined along two side edge portions and a bottom edge portion to form said bag, said first side wall being formed from a synthetic resin mesh material, and said second side wall being formed from a synthetic resin film material; and

(B) a reinforcing strip of a synthetic resin film extending along an upper edge of said first side wall of said bag, wherein

10 1) said reinforcing strip has a horizontal length, a vertical width, a

bottom edge, a top edge, and a pair of side edges;

15 2) said reinforcing strip overlaps said upper edge of said first side wall at a location well beneath said top edge of said reinforcing strip to form an extension that protrudes well above said upper edge of first side wall, said extension having a vertical width and a horizontal length, and

3) said side edges of said reinforcing strip are joined to said second side wall along seams extending at least a majority of the width of said extension.

2. The bag as recited in claim 1, wherein said synthetic resin mesh is a synthetic resin fiber mesh material.

3. The bag as recited in claim 2, wherein said synthetic resin mesh material is one of a cross laminated fiber mesh, a knit mesh, an extruded mesh, and a woven mesh.

4. The bag as recited in claim 1, wherein said extension is thermally bonded directly to said second side wall.

5. The bag as recited in claim 1, wherein said seams extend at least $\frac{1}{2}$ " above said upper edge of said first side wall.

6. The bag as recited in claim 1, wherein said seams extend at least 1" above said upper edge of said first side wall.

7. The bag as recited in claim 1, wherein said seams extend at least $1\frac{1}{4}$ " above said upper edge of said first side edge portion.

8. The bag as recited in claim 1, wherein at least one of said reinforcing strip and said second side wall have wicket holes formed therethrough for mounting the bag on wicket pins of the bag filling equipment.

9. The bag as recited in claim 8, wherein said wicket holes are formed in said second side wall.

10. The bag as recited in claim 9, wherein slits are cut in said second side wall in the vicinity of said wicket holes to allow for removal of the bag from the bag filling equipment.

11. The bag as recited in claim 1, wherein said reinforcing strip overlaps said upper edge of said first side wall by less than $\frac{1}{2}$ ".

12. The bag as recited in claim 1, wherein said extension constitutes at least one-half of the total vertical width of said reinforcing strip.

13. The bag as recited in claim 1, wherein at least the portions of said side seams along which said extension is bonded to said second side wall of said bag have a seam strength in excess of 5 lbs per linear inch.

14. The bag as recited in claim 1, wherein said portions of said side seams have a seam strength in excess of 6 lbs per linear inch.

15. A synthetic resin bag for use with wicket pins of automatic bag filling equipment, said bag comprising:

(A) first and second side walls joined along two side edge portions and a bottom edge portion to form said bag, said first side wall being formed from a synthetic resin fiber mesh material, and said second side wall being formed from a synthetic resin film material; and

(B) a reinforcing strip of a synthetic resin film extending along an upper edge of an exterior surface of said first side wall, wherein

1) said reinforcing strip has a horizontal length that is at least
10 generally equal to a horizontal width of said bag, a vertical width of at least 1-½",
a bottom edge, a top edge, and a pair of side edges;

2) said reinforcing strip overlaps said upper edge of said first side
edge wall such that said reinforcing strip is joined to said first side wall through a
horizontal seam positioned well beneath said top edge of said reinforcing strip to
15 form an extension that protrudes at least 1" above said upper edge of first side
wall, said extension having a vertical width and a horizontal length,

3) said side edges of said reinforcing strip are thermally bonded
directly to said second side wall along seams extending at least a majority of a
width of said extension, and

20 4) at least one of said reinforcing strip and said second side wall has
holes formed therein for mounting the bag on the wicket pins of the bag filling
equipment.

16. The bag as recited in claim 15, wherein the synthetic resin mesh is one of a cross
laminated fiber mesh, a knit mesh, an extruded mesh, and a woven mesh.

17. The bag as recited in claim 15, wherein said wicket holes are formed in said
second side wall.

18. The bag as recited in claim 15, wherein said reinforcing strip overlaps said first
side wall by less than ½".

19. The bag as recited in claim 15, wherein said extension constitutes at least one-half of the total width of said reinforcing strip.

20. A synthetic resin bag for use with wicketed automatic bag filling equipment, said bag comprising:

5 (A) first and second side walls joined along two side edge portions and a bottom edge portion to form said bag, said first side wall being formed from a synthetic resin mesh material, and said second side wall being formed from a synthetic resin film material, an upper edge of said second side wall extending above an upper edge of said first side wall and having wicket holes formed therein for hanging said bag from wicket pins of the bag filling equipment; and

10 (B) a strip of a synthetic resin film extending along an upper edge of said first side wall of the bag, wherein said strip protrudes well above said upper edge of first side wall to form an extension preventing said upper edge of said first side wall that presents an engagement surface for suction cups of the bag filling equipment.

21. The bag as recited in claim 20, wherein said extension of said strip has a vertical width, a horizontal length, and side edges, and wherein said side edges of said reinforcing strip are joined to said second side wall along seams extending at least a majority of the 5 width of said extension.

22. A method of making a bag, comprising:

(A) joining a first, synthetic resin mesh side wall to a second, synthetic resin film side wall along side and bottom edge portions of said bag, thereby producing an open-topped bag;

5 (B) positioning a reinforcing strip over said mesh side wall of said bag so as to form an extension that protrudes well above an upper edge of first side wall, said extension having a vertical width and a horizontal length;

(C) bonding said reinforcing strip to said first side wall along a horizontal seam positioned well beneath a top edge of said reinforcing strip; and

10 (D) bonding said side edges of said reinforcing strip to said second side wall along seams extending at least a majority of said width of said extension.

23. The method as recited in claim 22, wherein each of the bonding steps comprises thermally bonding the bonded components to one another.

24. The method as recited in claim 22, wherein, following the positioning and bonding steps, said seams extend at least 1" above said upper edge of said first side wall.

25. The method as recited in claim 22, wherein

the step (A) comprises bonding a continuous web of a synthetic resin mesh material and a continuous web of a synthetic resin film material together at

1) a first seam extending along longitudinally extending, lateral edge
5 portions of said webs generally corresponding to the bottoms of finished bags,
and

2) a plurality of longitudinally-spaced, laterally extending locations
corresponding to side edges of finished bags;

the step (B) comprises positioning a continuous strip of a synthetic resin film

10 material over a longitudinally extending, lateral edge portion of said mesh web
corresponding to the upper edges of the finished bags; and

the step (D) comprises bonding said continuous strip to said first and second side
walls at said longitudinally-spaced, laterally extending locations;

and further comprising

15 separating said webs longitudinally-spaced, laterally extending location to
separate the formed bags from one another.

26. The method as recited in claim 22, further comprising forming wicket holes in at
least one of said reinforcing strip and said second side wall for mounting the bag on
wicket pins of the bag filling equipment.

27. A method of filling a bag, comprising:

(A) providing a bag including a first side wall formed from a synthetic mesh
material and a second side wall formed from a synthetic resin film material, a reinforcing
strip of a synthetic resin film material extending along an upper edge of said first side
5 wall of the bag, wherein

(1) said reinforcing strip has a horizontal length, a vertical width, a bottom edge, a top of edge, and a pair of side edges,

(2) said reinforcing strip overlaps said upper edge of said first side wall such that said reinforcing strip is joined to said first side wall through a horizontal seam positioned well beneath said top edge of said reinforcing strip to form an extension that protrudes well above said upper edge of first side wall, said extension having a vertical width and a horizontal length, and

(3) said side edges of said reinforcing strip are joined to said second side wall along vertical seams extending at least a majority of a width of said extension;

(B) hanging said bag on a pair of spaced-apart wicket pins which extend through wicket holes in one of said reinforcing strip and second side wall of said bag;

(C) opening said bag by moving the side wall of the bag opposite the wicket holes from the side wall bearing said wicket holes; and

20 (D) while said bag is open, filling said bag from above, wherein
during the opening and filling steps, said vertical seams at said extension of said
reinforcing strip prevent tearing of said seams between said first and second side walls of
said bag.

28. The method as recited in claim 27, wherein said vertical seams at said extension are at least 1" long.

29. The method as recited in claim 28, wherein the opening step comprises first partially opening said bag using suction cups, then mechanically gripping the side wall opposite the side wall bearing said wicket holes and pulling it further away from the side wall bearing the wicket holes to fully open said bag.

30. The method as recited in claim 29, wherein
said wicket holes are formed in said second side wall of said bag,
the opening step comprises moving said first side wall of said bag away from said second side wall, and

5 the step of partially opening said bag comprises engaging said extension of said reinforcing strip with suction cups.

31. A method of filling a bag, comprising:

(A) providing a bag including a first side wall formed from a synthetic mesh material and a second side formed from a synthetic resin film material, a reinforcing strip of a synthetic resin film material extending along an exterior surface of an upper edge of
5 said first side wall of the bag, wherein

(1) said reinforcing strip has a horizontal length, a vertical width, a bottom edge, a top edge, and a pair of side edges,

(2) said reinforcing strip overlaps said exterior surface of said upper edge of said first side wall of said bag such that said reinforcing strip is joined to
10 said first side wall through a horizontal seam positioned well beneath said top edge of said reinforcing strip to form an extension that protrudes well above said

upper edge of first side wall, said extension having a vertical width and a horizontal length, and

(3) said side edges of said reinforcing strip are thermally bonded to

15 said second side wall of said bag along vertical seams extending at least a majority of said width of said extension;

(B) hanging said bag on a pair of spaced-apart wicket pins which extend through wicket holes formed in an exterior second side wall of said bag that extends above said upper edge of said first side wall;

20 (C) opening said bag by

(1) engaging said extension of said reinforcing strip with suction cups and drawing said first side wall away from said second side wall to partially open said bag, then

(2) mechanically gripping said first side wall, and then

25 (3) mechanically pulling said first side wall further away from said second side wall to fully open said bag; and

(D) while said bag is open, filling said bag from above, wherein

during the opening and filling steps, said vertical seams at said extension of said reinforcing strip prevent tearing of the seams between said first and second side walls of said bag.